



ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R01-OAR-2014-0604; A-1-FRL-9976-36-Region 1]

Air Plan Approval; Vermont; Infrastructure Requirement for the 2010 Sulfur Dioxide

National Ambient Air Quality Standard

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to approve the remaining portion of a November 2, 2015 State Implementation Plan (SIP) revision submitted by the State of Vermont. This revision addresses the interstate transport requirements of the Clean Air Act (CAA), referred to as the good neighbor provision, with respect to the primary 2010 sulfur dioxide (SO₂) national ambient air quality standard (NAAQS). This action proposes to approve Vermont's demonstration that the State is meeting its obligations regarding the transport of SO₂ emissions into other states. This action is being taken under the Clean Air Act.

DATES: Written comments must be received on or before **[Insert date 30 days after date of publication in the Federal Register]**.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-R01-OAR-2014-0604 at www.regulations.gov, or via email to dahl.donald@epa.gov. For comments submitted at Regulations.gov, follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. For either manner of submission, the EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official

comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the “For Further Information Contact” section. For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit www.epa.gov/dockets/commenting-epa-dockets.

Publicly available docket materials are available at www.regulations.gov or at the U.S.

Environmental Protection Agency, EPA New England Regional Office, Office of Ecosystem Protection, Air Quality Planning Unit, 5 Post Office Square – Suite 100, Boston, MA. EPA requests that if at all possible, you contact the contact listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your inspection. The Regional Office’s official hours of business are Monday through Friday, 8:30 a.m. to 4:30 p.m., excluding legal holidays.

FOR FURTHER INFORMATION CONTACT: Donald Dahl, Air Permits, Toxics, and Indoor Programs Unit, U.S. Environmental Protection Agency, EPA New England Regional Office, 5 Post Office Square - Suite 100, (Mail code OEP05-2), Boston, MA 02109 - 3912, tel. (617) 918-1657; or by e-mail at dahl.donald@epa.gov.

SUPPLEMENTARY INFORMATION: Throughout this document whenever “we,” “us,” or “our” is used, we mean EPA. The following outline is provided to aid in locating information in this preamble.

Table of Contents

I. Background

II. State Submittal

III. Summary of the Proposed Action

IV. Section 110(A)(2)(D)(i)(I) – Interstate Transport

- A. General Requirements and Historical Approaches for Criteria Pollutants
- B. Approach for Addressing the Interstate Transport Requirements of the 2010 primary SO₂ NAAQS in Vermont

V. Interstate Transport Demonstration for SO₂ Emissions

- A. Prong 1 Analysis – Significant Contribution to SO₂ Nonattainment
 - 1. Impact on the Central New Hampshire Nonattainment Area
 - 2. SO₂ Emissions Trends
 - 3. SO₂ Ambient Air Quality
 - 4. Federally Enforceable Regulations Specific to SO₂ and Permitting Requirements
 - 5. Conclusion
- B. Prong 2 Analysis – Interference with Maintenance of the NAAQS

VI. Proposed Action

VII. Statutory and Executive Order Reviews

I. Background

On June 22, 2010 (75 FR 35520), EPA promulgated a revised primary NAAQS for SO₂ at a level of 75 ppb, based on a 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. Pursuant to section 110(a)(1) of the CAA, states are required to submit SIPs meeting the applicable requirements of section 110(a)(2) within three years after promulgation of a new or revised NAAQS, or within such shorter period as EPA may prescribe.¹ These SIPs, which EPA has historically referred to as “infrastructure SIPs,” are to provide for the “implementation, maintenance, and enforcement” of such NAAQS, and the requirements are

¹ This requirement applies to both primary and secondary NAAQS, but EPA’s approval in this document applies only to the 2010 primary NAAQS for SO₂ because EPA did not establish in 2010 a new secondary NAAQS for SO₂.

designed to ensure that the structural components of each state's air quality management program are adequate to meet the state's responsibilities under the CAA. A detailed history, interpretation, and rationale of these SIPs and their requirements can be found in, among other documents, EPA's May 13, 2014 proposed rule titled, "Infrastructure SIP requirements for the 2008 Lead NAAQS," in the section "What is the scope of this rulemaking?" (*see* 79 FR 27241 at 27242-27245). As noted above, section 110(a) of the CAA imposes an obligation upon states to submit to EPA a SIP submission for a new or revised NAAQS. The content of individual state submissions may vary depending upon the facts and circumstances, and may also vary depending upon what provisions the state's approved SIP already contains.

On November 2, 2015, the Vermont Department of Environmental Conservation (VT DEC) submitted proposed revisions to its SIP, certifying that its SIP meets the requirements of section 110(a)(2) of the CAA with respect to the 2008 ozone, 2010 NO₂, and 2010 SO₂ primary NAAQS. On June 27, 2017 (82 FR 29005), EPA approved VT DEC's certification that its SIP was adequate to meet most of the program elements required by section 110(a)(2) of the CAA with respect to the 2008 ozone, 2010 NO₂, and 2010 SO₂ NAAQS. EPA conditionally approved the State's submission in relation to subsections (C), (D), and (J) of CAA section 110(a)(2) in relation to the prevention of significant deterioration permit program.

However, at that time, EPA did not take action on VT DEC's certification that its SIP met the requirements of section 110(a)(2)(D)(i)(I) for the 2010 primary SO₂ NAAQS. EPA is now proposing to approve VT DEC's November 2, 2015 certification that its SIP meets the requirements of CAA section 110(a)(2)(D)(i)(I), for purposes of the 2010 SO₂ NAAQS.

II. State Submittal

Vermont presented several facts in its SIP submission on the effect of SO₂ emissions from sources within Vermont on downwind and neighboring states' SO₂ nonattainment areas and

those states' ability to maintain the 2010 SO₂ NAAQS. The SIP submission notes statewide SO₂ emissions from point sources in 2011 were less than 500 tons total. Vermont also included two data points regarding ambient monitoring data in its November 2015 submittal. First, the design value from an instate monitor in Rutland for the period 2012-2014 was 13 ppb, which is only 17% of the 2010 SO₂ standard. Vermont also stated the most recent design value (2013) for the central New Hampshire nonattainment area was 23 ppb. Finally, Vermont states in its SIP submission that “[n]o source or sources within Vermont have been identified as contributing significantly to nonattainment in any other state or are the subject of an active finding under section 126 of the CAA with respect to SO₂ or any other air pollutant.”

III. Summary of the Proposed Action

This proposed approval of Vermont's November 2, 2015 SIP submission addressing interstate transport of SO₂ is intended to show that the State is meeting its obligations regarding CAA section 110(a)(2)(D)(i)(I) relative to the primary 2010 SO₂ NAAQS.² Interstate transport requirements for all NAAQS pollutants prohibit any source, or other type of emissions activity, in one state from emitting any air pollutant in amounts that will contribute significantly to nonattainment, or interfere with maintenance, of the NAAQS in another state. As part of this analysis, and as explained in detail below, EPA has taken several approaches to addressing interstate transport in other actions based on the characteristics of the pollutant, the interstate problem presented by emissions of that pollutant, the sources that emit the pollutant, and the information available to assess transport of that pollutant.

² This proposed approval of Vermont's SIP submission under CAA section 110(a)(2)(D)(i)(I) is based on the information contained in the administrative record for this action, and does not prejudice any other future EPA action that may make other determinations regarding Vermont's air quality status. Any such future actions, such as area designations under any NAAQS, will be based on their own administrative records and EPA's analyses of information that becomes available at those times. Future available information may include, and is not limited to, monitoring data and modeling analyses conducted pursuant to EPA's Data Requirements Rule (80 FR 51052, August 21, 2015) and information submitted to EPA by states, air agencies, and third-party stakeholders such as citizen groups and industry representatives.

Despite being emitted from a similar universe of point and nonpoint sources, interstate transport of SO₂ is unlike the transport of fine particulate matter (PM_{2.5}) or ozone that EPA has addressed in other actions, in that SO₂ is not a regional mixing pollutant that commonly contributes to widespread nonattainment of the SO₂ NAAQS over a large, multi-state area. While in certain respects transport of SO₂ is more analogous to the transport of lead (Pb) because SO₂'s and Pb's physical properties result in localized impacts very near the emissions source, in another respect the physical properties and release height of SO₂ are such that impacts of SO₂ do not experience the same sharp decrease in ambient concentrations as rapidly and as nearby as they do for Pb. While emissions of SO₂ travel farther and have sufficiently wider-ranging impacts than emissions of Pb such that it is reasonable to require a different approach for assessing SO₂ transport than assessing Pb transport, the differences are not significant enough to treat SO₂ in a manner similar to the way in which EPA treats and analyzes regional transport pollutants such as ozone or PM_{2.5}.

Put simply, a different approach is needed for interstate transport of SO₂ than the approach used for the other pollutants identified above: the approaches EPA has adopted for Pb transport are too tightly circumscribed to the source, and the approaches for ozone or PM_{2.5} transport are too regionally focused. SO₂ transport is therefore a unique case, and EPA's evaluation of whether Vermont has met its transport obligations in relation to SO₂ was accomplished in several discrete steps.

First, EPA evaluated the universe of sources in Vermont likely to be responsible for SO₂ emissions that could contribute to interstate transport. An assessment of the 2014 National Emissions Inventory (NEI) for Vermont made it clear that the vast majority of SO₂ emissions in

Vermont are from fuel combustion at point and nonpoint sources³, and therefore it would be reasonable to evaluate the downwind impacts of emissions from these two fuel combustion source categories, combined, in order to help determine whether the State has met its transport obligations.

Second, EPA selected a spatial scale—essentially, the geographic area and distance around the point sources in which we could reasonably expect SO₂ impacts to occur—that would be appropriate for its analysis, ultimately settling on utilizing an “urban scale” with dimensions from 4 to 50 kilometers from point and nonpoint sources, given the usefulness of that range in assessing trends in both area-wide air quality and the effectiveness of large-scale pollution control strategies. As such, EPA utilized an assessment up to 50 kilometers from fuel-combustion sources in order to assess trends in area-wide air quality that might have an impact on the transport of SO₂ from Vermont to downwind states.

Third, EPA assessed all available data at the time of this rulemaking regarding SO₂ emissions in Vermont and their possible impacts in downwind states, including: 1) SO₂ ambient air quality; 2) SO₂ emissions and SO₂ emissions trends; 3) SIP-approved SO₂ regulations and permitting requirements; and 4) other SIP-approved or federally-promulgated regulations which may yield reductions of SO₂ at Vermont’s fuel-combustion point and nonpoint sources.

Fourth, using the universe of information identified in steps 1-3 (i.e., emissions sources, spatial scale and available data, and enforceable regulations), EPA then conducted an analysis under CAA section 110(a)(2)(D)(i)(I) to evaluate whether or not fuel-combustion sources in Vermont would significantly contribute to SO₂ nonattainment in other states, and then whether emissions from those sources would interfere with maintenance of the SO₂ NAAQS in other states.

³ See EPA’s webpage, www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei, for a description of what types of sources of air emissions are considered point and nonpoint sources.

Based on the analysis provided by the State in its November 2, 2015 SIP submission and EPA's assessment of the information discussed at length below, EPA proposes to find that sources or other emissions activity within Vermont will not contribute significantly to nonattainment, nor will they interfere with maintenance of the 2010 primary SO₂ NAAQS in any other state.

IV. Section 110(a)(2)(D)(i)(I) – Interstate Transport

A. General Requirements and Historical Approaches for Criteria Pollutants

Section 110(a)(2)(D)(i)(I) requires SIPs to include provisions prohibiting any source or other type of emissions activity in one state from emitting any air pollutant in amounts that will contribute significantly to nonattainment, or interfere with maintenance, of the NAAQS in another state. The two clauses of this section are referred to as prong 1 (significant contribution to nonattainment) and prong 2 (interference with maintenance of the NAAQS).

EPA's most recent infrastructure SIP guidance, the September 13, 2013 "Guidance on Infrastructure State Implementation Plan (SIP) Elements under Clean Air Act Sections 110(a)(1) and 110(a)(2)," did not explicitly include criteria for how the Agency would evaluate infrastructure SIP submissions intended to address section 110(a)(2)(D)(i)(I).⁴ With respect to certain pollutants, such as ozone and particulate matter, EPA has addressed interstate transport in eastern states in the context of regional rulemaking actions that quantify state emission reduction

⁴ At the time the September 13, 2013 guidance was issued, EPA was litigating challenges raised with respect to its Cross State Air Pollution Rule ("CSAPR"), 76 FR 48208 (August 8, 2011), designed to address the CAA section 110(a)(2)(D)(i)(I) interstate transport requirements with respect to the 1997 ozone and the 1997 and 2006 PM_{2.5} NAAQS. CSAPR was vacated and remanded by the D.C. Circuit in 2012 pursuant to *EME Homer City Generation, L.P. v. EPA*, 696 F.3d 7. EPA subsequently sought review of the D.C. Circuit's decision by the Supreme Court, which was granted in June 2013. As EPA was in the process of litigating the interpretation of section 110(a)(2)(D)(i)(I) at the time the infrastructure SIP guidance was issued, EPA did not issue guidance specific to that provision. The Supreme Court subsequently vacated the D.C. Circuit's decision and remanded the case to that court for further review. 134 S.Ct. 1584 (2014). On July 28, 2015, the D.C. Circuit issued a decision upholding CSAPR, but remanding certain elements for reconsideration. 795 F.3d 118.

obligations.⁵ In other actions, such as EPA action on western state SIPs addressing ozone and particulate matter, EPA has considered a variety of factors on a case-by-case basis to determine whether emissions from one state interfere with the attainment and maintenance of the NAAQS in another state. In such actions, EPA has considered available information such as current air quality, emissions data and trends, meteorology, and topography.⁶

For other pollutants such as Pb, EPA has suggested the applicable interstate transport requirements of section 110(a)(2)(D)(i)(I) can be met through a state's assessment as to whether or not emissions from Pb sources located in close proximity to its borders have emissions that impact a neighboring state such that they contribute significantly to nonattainment or interfere with maintenance in that state. For example, EPA noted in an October 14, 2011 memorandum titled, "Guidance on Infrastructure SIP Elements Required Under Sections 110(a)(1) and 110(a)(2) for the 2008 Pb NAAQS,"⁷ that the physical properties of Pb prevent its emissions from experiencing the same travel or formation phenomena as PM_{2.5} or ozone, and there is a sharp decrease in Pb concentrations, at least in the coarse fraction, as the distance from a Pb source increases. Accordingly, while it may be possible for a source in a state to emit Pb in a location and in quantities that may contribute significantly to nonattainment in, or interfere with maintenance by, any other state, EPA anticipates that this would be a rare situation, e.g., where large sources are in close proximity to state boundaries.⁸ Our rationale and explanation for

⁵ NO_x SIP Call, 63 FR 57371 (October 27, 1998); Clean Air Interstate Rule (CAIR), 70 FR 25172 (May 12, 2005); CSAPR, 76 FR 48208 (August 8, 2011).

⁶ See, e.g., Approval and Promulgation of Implementation Plans; State of California; Interstate Transport of Pollution; Significant Contribution to Nonattainment and Interference With Maintenance Requirements, Proposed Rule, 76 FR 146516, 14616-14626 (March 17, 2011); Final Rule, 76 FR 34872 (June 15, 2011); Approval and Promulgation of State Implementation Plans; State of Colorado; Interstate Transport of Pollution for the 2006 24-Hour PM_{2.5} NAAQS, Proposed Rule, 80 FR 27121, 27124-27125 (May 12, 2015); Final Rule, 80 FR 47862 (August 10, 2015).

⁷

https://www3.epa.gov/ttn/naaqs/aqmguidance/collection/cp2/20111014_page_lead_caa_110_infrastructure_guidance.pdf.

⁸ Id. at pp 7-8

approving the applicable interstate transport requirements under section 110(a)(2)(D)(i)(I) for the 2008 Pb NAAQS, consistent with EPA's interpretation of the October 14, 2011 guidance document, can be found in, among other instances, the proposed approval and a subsequent final approval of interstate transport SIPs submitted by Illinois, Michigan, Minnesota, and Wisconsin.⁹

B. Approach for Addressing the Interstate Transport Requirements of the 2010 Primary SO₂ NAAQS in Vermont

This document describes EPA's evaluation of Vermont's conclusion contained in the State's November 2, 2015 infrastructure SIP submission that the State satisfies the requirements of CAA section 110(a)(2)(D)(i)(I) for the 2010 SO₂ NAAQS.¹⁰

As previously noted, section 110(a)(2)(D)(i)(I) requires an evaluation of any source or other type of emissions activity in one state and how emissions from these sources or activities may impact air quality in other states. As the analysis contained in Vermont's submittal demonstrates, a state's obligation to demonstrate that it is meeting section 110(a)(2)(D)(i)(I) cannot be based solely on the fact that there are no data requirements rule (DRR) sources within the state.

Therefore, EPA believes that a reasonable starting point for determining which sources and emissions activities in Vermont are likely to impact downwind air quality with respect to the SO₂ NAAQS is by using information in the NEI.¹¹ The NEI is a comprehensive and detailed estimate of air emissions of criteria pollutants, criteria precursors, and hazardous air pollutants from air emissions sources, and is updated every three years using information provided by the states. At the time of this rulemaking, the most recently available dataset is the 2014 NEI, and the state summary for Vermont is included in the table below.

⁹ See 79 FR 27241 at 27249 (May 13, 2014) and 79 FR 41439 (July 16, 2014).

¹⁰ EPA notes that the evaluation of other states' satisfaction of section 110(a)(2)(D)(i)(I) for the 2010 SO₂ NAAQS can be informed by similar factors found in this proposed rulemaking, but may not be identical to the approach taken in this or any future rulemaking for Vermont, depending on available information and state-specific circumstances.

¹¹ <https://www.epa.gov/air-emissions-inventories/national-emissions-inventory>.

Table 1: Summary of 2014 NEI SO ₂ Data for Vermont	
Category	Emissions (tons per year)
Fuel Combustion: Electric Utilities	2
Fuel Combustion: Industrial	442
Fuel Combustion: Other	891
Waste Disposal and Recycling	61
Highway Vehicles	65
Off-Highway	30
Miscellaneous	10
Total	1,501

The EPA observes that according to the 2014 NEI, the vast majority of SO₂ emissions in Vermont originate from fuel combustion at point and nonpoint sources. Therefore, an assessment of Vermont's satisfaction of all applicable requirements under section 110(a)(2)(D)(i)(I) of the CAA for the 2010 SO₂ NAAQS may reasonably be based upon evaluating the downwind impacts of emissions from the combined fuel combustion categories (i.e., electric utilities, industrial processes, and other sources¹²).

The definitions contained in Appendix D to 40 CFR part 58 are helpful indicators of the travel and formation phenomenon for SO₂ originating from stationary sources in its stoichiometric gaseous form in the context of the 2010 primary SO₂ NAAQS. Notably, section 4.4 of Appendix D titled, "Sulfur Dioxide (SO₂) Design Criteria" provides definitions for SO₂ Monitoring Spatial Scales for microscale, middle scale, neighborhood, and urban scale monitors. The microscale includes areas in close proximity to SO₂ point and area sources, and those areas extend approximately 100 meters from a facility. The middle scale generally represents air quality levels in areas 100 meters to 500 meters from a facility, and may include locations of maximum expected short-term concentrations due to the proximity of major SO₂ point, area, and

¹² The "other" category of fuel combustion in Vermont is comprised almost entirely of residential heating through fuel oil and wood combustion.

non-road sources. The neighborhood scale characterizes air quality conditions between 0.5 kilometers and 4 kilometers from a facility, and emissions from stationary and point sources may under certain plume conditions, result in high SO₂ concentrations at this scale. Lastly, the urban scale is used to estimate concentrations over large portions of an urban area with dimensions of 4 to 50 kilometers from a facility, and such measurements would be useful for assessing trends and concentrations in area-wide air quality, and hence, the effectiveness of large-scale pollution control strategies. Based on these definitions contained in EPA's own regulations, we believe that it is appropriate to examine the impacts of emissions from electric utilities and industrial processes in Vermont in distances ranging from 0 km to 50 km from the facility. In other words, SO₂ emissions from stationary sources in the context of the 2010 primary NAAQS do not exhibit the same long-distance travel, regional transport or formation phenomena as either ozone or PM_{2.5}, but rather, these emissions behave more like Pb with localized dispersion. Therefore, an assessment up to 50 kilometers from potential sources would be useful for assessing trends and SO₂ concentrations in area-wide air quality.¹³

The largest category of SO₂ emissions in Table 1 is for "other" fuel combustion sources. The majority of emissions in this category is from residential fuel combustion (758 tons per year), or 50% of the total statewide SO₂ emissions for 2014. Residential homes combusting fuel are considered nonpoint sources. For any state where the SO₂ contribution from nonpoint sources make up a majority of all statewide SO₂ emissions, EPA believes it is reasonable to evaluate any regulations intended to address fuel oil, specifically with respect to the sulfur content in order to determine interstate transport impacts from the category of "other" sources of fuel combustion.

Our current implementation strategy for the 2010 primary SO₂ NAAQS includes the flexibility to characterize air quality for stationary sources via either data collected at ambient air

¹³ EPA recognizes in Appendix A.1 titled, "AERMOD (AMS/EPA Regulatory Model) –" of Appendix W to 40 CFR part 51 that the model is appropriate for predicting SO₂ up to 50 kilometers.

quality monitors sited to capture the points of maximum concentration, or air dispersion modeling.¹⁴ Our assessment of SO₂ emissions from fuel combustion categories in the State and their potential impacts on neighboring states are informed by all available data at the time of this rulemaking, and include: SO₂ ambient air quality; SO₂ emissions and SO₂ emissions trends; SIP-approved SO₂ regulations and permitting requirements; and, other SIP-approved or federally promulgated regulations which may yield reductions of SO₂.

V. Interstate Transport Demonstration for SO₂ Emissions

A. Prong 1 Analysis—Significant Contribution to SO₂ Nonattainment

Prong 1 of the good neighbor provision requires state plans to prohibit emissions that will significantly contribute to nonattainment of a NAAQS in another state. In order to evaluate Vermont's satisfaction of prong 1, EPA evaluated the State's SIP submission in relation to the following five factors: 1) the impact on the Central New Hampshire Nonattainment Area; 2) SO₂ emission trends for Vermont and neighboring states; 3) SO₂ ambient air quality data; 4) SIP-approved regulations specific to SO₂ emissions and permit requirements; and 5) other SIP-approved or federally-enforceable regulations that, while not directly intended to address or reduce SO₂ emissions, may yield reductions of the pollutant. A detailed discussion of each of these factors is below.

1. Impact on the Central New Hampshire Nonattainment Area

The nearest nonattainment area to Vermont for the 2010 SO₂ NAAQS is in New Hampshire. On August 5, 2013, EPA designated the Central New Hampshire Nonattainment Area, an area surrounding Merrimack Station, a coal-fired power plant, as nonattainment for the 2010 SO₂ NAAQS. *See* 78 FR 47191. On September 28, 2017, EPA proposed approval of New Hampshire's attainment plan for this nonattainment area. *See* 82 FR45242. The State's plan did

¹⁴ <https://www.epa.gov/so2-pollution/2010-1-hour-sulfur-dioxide-so2-primary-national-ambient-air-quality-standards-naaqs>.

not rely on any reductions in SO₂ emissions from sources in Vermont to demonstrate the Central New Hampshire Nonattainment Area will attain the 2010 SO₂ NAAQS by the 2018 attainment date. Furthermore, no comments received on EPA's proposed approval of the State's plan suggest SO₂ emissions from sources in Vermont should be considered in any attainment demonstration.¹⁵

2. SO₂ Emissions Trends

As noted above, EPA's approach for addressing the interstate transport of SO₂ in Vermont is based upon emissions from fuel combustion at electric utilities, industrial sources, and residential heating. As part of the SIP submittal, Vermont observed that, in accordance with the most recently available designations guidance at the time¹⁶, there were no facilities in Vermont with reported actual emissions greater than or equal to 500 tons per year of SO₂ in 2014.

According to the 2014 NEI data, the highest SO₂ emissions from a single point source was 158 tons from Agrimark in Middlebury, Vermont and the next largest emitter of SO₂ from an industrial or electric generating facility in Vermont was Fibermark, located in Brattleboro, which emitted 12 tons of SO₂.

As demonstrated by the data in Table 2, statewide SO₂ emissions in Vermont and in its three neighboring states, New Hampshire, Massachusetts and New York, have significantly decreased over time. This decreasing trend should continue into the near future in Vermont, New York, and Massachusetts as these three states have adopted strategies to lower the sulfur content (by

¹⁵ See docket for Air Plan Approval; NH; Attainment Plan for the Central New Hampshire 2010 1-Hour SO₂ Nonattainment Area at <https://www.regulations.gov/docket?D=EPA-R01-OAR-2017-0083>

¹⁶ March 24, 2011 guidance document titled, "Area Designations for the 2010 Revised Primary Sulfur Dioxide National Ambient Air Quality Standards." See, e.g. <http://dnr.wi.gov/topic/AirQuality/documents/SO2DesignationsGuidance2011.pdf>.

weight) of fuel oil.¹⁷ By July 1, 2018, the home heating oil in these three states will be limited to 15 parts per million (ppm) of sulfur by weight.

Table 2: Statewide SO ₂ Data (tons per year) for Vermont, New Hampshire, New York, and Massachusetts ¹⁸					
State	2000	2005	2010	2016	% Change from 2000 to 2016
Vermont	9,438	7,038	3,659	1,455	-85%
New Hampshire	68,768	63,634	35,716	5,462	-92%
Massachusetts	208,146	139,937	57,892	13,518	-94%
New York	543,868	386,568	170,247	59,520	-89%

3. SO₂ Ambient Air Quality

Data collected at an ambient air quality monitor located in Rutland, Vermont indicates that the monitored values of SO₂ in the State have remained below the NAAQS. Relevant data from Air Quality Standards (AQS) Design Value (DV)¹⁹ reports for recent and complete 3-year periods are summarized in Table 3.

Table 3: Trend in SO ₂ Design Values for the AQS Monitor in Vermont				
AQS Monitor Site	Monitor Location	2012-2014 DV (ppb)	2013-2015 DV (ppb)	2014-2016 DV (ppb)
50-021-0002	Rutland	13	9	6

As shown in Table 3 above, the DVs at the Rutland monitor for all periods between 2012 and 2016 have decreased. The most recent DV for the Rutland monitor, covering the years 2014 – 2016, is 6 ppb, which is 92% below the NAAQS.²⁰

¹⁷ On May 22, 2012, EPA approved Vermont's low sulfur fuel regulation. *See* 77 FR 30212. On September 19, 2013, EPA approved Massachusetts' low sulfur fuel regulation. *See* 78 FR 57487. On August 8, 2012, EPA approved New York's low sulfur fuel statute. *See* 77 FR 51915.

¹⁸ *See* Air Pollution Emissions Trend Data at <https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>.

¹⁹ A "Design Value" is a statistic that describes the air quality status of a given location relative to the level of the NAAQS. The interpretation of the 2010 primary SO₂ NAAQS (set at 75 parts per billion [ppb]) including the data handling conventions and calculations necessary for determining compliance with the NAAQS can be found in Appendix T to 40 CFR part 50.

²⁰ There is another ambient monitor in Underhill, Vermont that only had a valid DV for 2014-2016. The DV was 2 ppb.

However, the absence of a violating ambient air quality monitor within the State is insufficient to demonstrate that Vermont has met its interstate transport obligation. While the decreasing DVs may help to assist in characterizing air quality within Vermont, prong 1 of section 110(a)(2)(D)(i)(I) specifically addresses what effects sources within Vermont may have on air quality in neighboring states. Therefore, an evaluation and analysis of SO₂ emissions data from facilities within the State, together with the potential effects of such emissions on ambient air quality in neighboring states, is appropriate.

As previously discussed, EPA's definitions of spatial scales for SO₂ monitoring networks indicate that the maximum impacts from stationary sources can be expected within 4 kilometers of such sources, and that distances up to 50 kilometers would be useful for assessing trends and concentrations in area-wide air quality. The only neighboring states within 50 km of an SO₂ source in Vermont are Massachusetts, New Hampshire, and New York. As a result, no further analysis of other Northeast states was conducted for assessing the impacts of the interstate transport of SO₂ pollution from facilities located in Vermont.

There are four ambient SO₂ monitors operating in Massachusetts, New Hampshire, and New York within 50 km of Vermont's border. These monitors are identified in Table 4, along with those monitors' DVs for SO₂ in the last three, three-year periods. As shown in Table 4, SO₂ DVs for these monitors are decreasing, with the exception of Wilmington, NY which increased 1 ppb between the 2013-2015 and 2014-2016 periods. The highest DV for the most recent DV period (between 2014-2016) is 8% of the NAAQS.

Table 4: Trend in SO ₂ Design Values for AQS Monitors within 50 km of Vermont				
AQS Monitor Site	Monitor Location	2012-2014 DV (ppb)	2013-2015 DV (ppb)	2014-2016 DV (ppb)
25-015-4002	Quabbin Summit, MA	6	5	4
33-011-5001	Pack Monadock, NH	5	5	3
36-001-00012	Loudonville Reservoir, NY	8	8	6

36-031-0003	Wilmington, NY	3	3	4
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4. Federally Enforceable Regulations Specific to SO₂ and Permitting Requirements

The State has various regulations to ensure that SO₂ emissions are not expected to substantially increase in the future. One notable example consists of the federally-enforceable conditions contained in Vermont's Air Pollution Control Regulation (APCR), Subchapter II, Section 5-221, "Prohibition of Pollution Potential Materials in Fuel." This regulation, last approved by EPA into the SIP on May 22, 2012 (77 FR 30212) limits the amount of sulfur by weight in fuel oil. As discussed earlier in this document, the 2014 NEI indicates that the single largest, albeit diffuse, source category of SO₂ emissions in Vermont is from fuel combustion for residential heating (891 tons). Starting on July 1, 2014 the sulfur content for home heating oil in Vermont was lowered to 500 parts per million (ppm), or 0.05% by weight. An additional reduction in the amount of SO₂ emissions from the use of home heating oil will occur after July 1, 2018 when the sulfur content will be reduced from 500 ppm to 15 ppm or 0.0015% by weight, representing a 97% decrease in SO₂ emissions from residential oil combustion.

In addition, for the purposes of ensuring that SO₂ emissions at new or modified stationary sources in Vermont do not adversely impact air quality, the State's SIP-approved nonattainment new source review (NNSR) and prevention of significant deterioration (PSD) programs are contained in APCR, Subchapter V "Review of New Air Contaminant Sources." This regulation ensures that SO₂ emissions due to new facility construction or to modifications at existing facilities will not adversely impact air quality in Vermont and will likely not adversely impact air quality in neighboring states.

Finally, in addition to the State's SIP-approved regulations, EPA observes that facilities in Vermont are also subject to the federal requirements contained in regulations such as the National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial,

Commercial, and Institutional Boilers and Process Heaters. This regulation reduces acid gases, which have a co-benefit of reducing SO₂ emissions.

5. Conclusion

As discussed, EPA has considered the following information in evaluating the State's satisfaction of the requirements of prong 1 of CAA section 110(a)(2)(D)(i)(I):

1) Past and projected SO₂ emission trends demonstrate that ambient SO₂ air quality issues in neighboring states are unlikely to occur due to SO₂ emissions from sources in Vermont; and

2) Current SIP provisions and other federal programs will further reduce SO₂ emissions from sources within Vermont.

Based on the analysis provided by the State in its November 2, 2015 SIP submission and based on each of the factors listed above, EPA proposes to find that any sources or other emissions activity within the State will not contribute significantly to nonattainment of the 2010 primary SO₂ NAAQS in any other state.

B. Prong 2 Analysis – Interference with Maintenance of the SO₂ NAAQS

Prong 2 of the good neighbor provision requires state plans to prohibit emissions that will interfere with maintenance of a NAAQS in another state. Given the continuing trend of decreased SO₂ emissions from sources within Vermont, EPA believes that a reasonable criterion to ensure that sources or other emissions activity originating within Vermont do not interfere with its neighboring states' ability to maintain the NAAQS consists of evaluating whether these decreases in emissions can be maintained over time.

As shown in Table 2, above, state-wide SO₂ emissions in Vermont, and the three neighboring states of Massachusetts, New Hampshire, and New York, have significantly decreased since 2000. Three of these states (Massachusetts, New York, and Vermont) have EPA-approved low sulfur fuel oil requirements in their SIPs, requiring the sulfur content in home heating oil and

other sources using distillate oil to be lowered by an additional 97% no later than July 1, 2018.²¹

According to 2014 NEI data, home heating oil is the largest category of SO₂ emissions in three of the states, Vermont, Massachusetts, and New Hampshire. In New York, home heating oil was not the largest category of SO₂ emissions in the 2014 NEI because the sulfur content in home heating oil was reduced by the State to 15 ppm on July 1, 2012.

Utilizing home heating oil usage data from the U. S. Energy Information Administration and SIP-approved limits on the sulfur content of home heating oil, future SO₂ emissions from home heating oil can be forecasted in Massachusetts and Vermont where the reduction in sulfur content to 15 ppm will not take effect until July 1, 2018. According to EPA's guidance titled "Compilation of Air Pollutant Emission Factors (AP42)" Chapter 1.3 titled, "Fuel Oil Combustion,"²² more than 95% of the sulfur in fuel is converted to SO₂. Table 5 provides the estimated SO₂ emissions from Massachusetts and Vermont based on home heating oil usage in 2016 and using the average annual home heating oil usage over a five-year period (2012-2016)²³ to estimate the SO₂ emissions in 2019, when the sulfur content limit of 15 ppm will be in place for the entire calendar year heating season.

Table 5: Estimated SO ₂ Emissions from Home Heating Oil			
State	Average Home Heating Oil Usage 2012-2016 (1,000 gal)	Estimate of SO ₂ Emissions (Tons) From Households Using Oil (2016)	Estimate of SO ₂ Emissions (Tons) From Households Using Oil (2019)
Vermont	70,701	254	8
Massachusetts	545,075	1,643	58

While EPA does not currently have a way to quantify the impacts of multiple small, diffuse sources of SO₂ on air quality in neighboring states, the drastic decrease in the allowable sulfur

²¹ See 77 FR 30212 (May 22, 2012) for Vermont, 78 FR 57487 (September 19, 2013) for Massachusetts, and 77 FR 51915 (August 8, 2012), for New York.

²² See emission factors at <https://www3.epa.gov/ttn/chief/ap42/ch01/final/c01s03.pdf>.

²³ See residential fuel oil usage at https://www.eia.gov/dnav/pet/pet_cons_821usea_a_epd0_var_mgal_a.htm.

content in fuel oil in Vermont and the associated reductions in SO₂ emissions, combined with the diffuse nature of these emissions, makes it unlikely that the current and future emissions from residential combustion of fuel oil are likely to lead to interference of maintenance of the NAAQS in a neighboring state. Specifically, by 2018, in both Massachusetts and Vermont, the yearly SO₂ emissions from a household using 1,000 gallons of fuel oil will drop to under 0.21 pounds per year.

As shown in Table 2, statewide SO₂ emissions in Vermont have decreased over time. Several factors have caused this decrease in emissions, including the effective date of APCR Subchapter II, Section 5-221 and industrial boilers switching to lower sulfur emitting fuels due to economics. According to emission trends data,²⁴ SO₂ emissions from industrial sources decreased in Vermont by almost 90% from 2000 to 2016. The EPA believes that since actual SO₂ emissions from the facilities currently operating in Vermont have decreased between 2000 and 2016, this trend shows that emissions originating in Vermont are not expected to interfere with the neighboring states' ability to maintain the 2010 SO₂ NAAQS.

As discussed above, EPA expects SO₂ from point sources combusting fuel oil in Vermont will be lower in the future due to the lowering of the sulfur content in fuels as required by APCR Subchapter II, Section 5-221.

Lastly, any future large sources of SO₂ emissions will be addressed by Vermont's SIP-approved Prevention of Significant Deterioration (PSD) program. Future minor sources of SO₂ emissions will be addressed by the State's minor new source review permit program. The permitting regulations contained within these programs, along with the other factors already discussed, are expected to help ensure that ambient concentrations of SO₂ in Massachusetts, New

²⁴ See Air Pollution Emissions Trend Data at <https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>.

Hampshire or New York are not exceeded as a result of new facility construction or modification occurring in Vermont.

It is also worth noting the air quality trends for ambient SO₂ in the Northeastern United States.²⁵ This region has experienced a 77% decrease in the annual 99th percentile of daily maximum 1-hour averages between 2000 and 2015 based on 46 monitoring sites, and the most recently available data for 2015 indicates that the mean value at these sites was 17.4 ppb, a value less than 25% of the NAAQS. When this trend is evaluated alongside the monitored SO₂ concentrations within the State of Vermont as well as the SO₂ concentrations recorded at monitors in Massachusetts, New York, and New Hampshire within 50 km of Vermont's border, EPA does not believe that sources or emissions activity from within Vermont are significantly different than the overall decreasing monitored SO₂ concentration trend in the Northeast region. As a result, EPA finds it unlikely that sources or emissions activity from within Vermont will interfere with other states' ability to maintain the 2010 primary SO₂ NAAQS.

Based on each of factors contained in the prong 2 maintenance analysis above, EPA proposes to find that sources or other emissions activity within the State will not interfere with maintenance of the 2010 primary SO₂ NAAQS in any other state.

VI. Proposed Action

Considering the above analysis, EPA is proposing to approve Vermont's November 2, 2015 infrastructure submittal for the 2010 primary SO₂ NAAQS as it pertains to Section 110(a)(2)(D)(i)(I) of the CAA. EPA is soliciting public comments on the issues discussed in this document. These comments will be considered before taking final action. Interested parties may participate in the Federal rulemaking procedure by submitting comments to this proposed rule by following the instructions listed in the **ADDRESSES** section of this Federal Register.

²⁵ See <https://www.epa.gov/air-trends/sulfur-dioxide-trends>.

VII. Statutory and Executive Order Reviews

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role is to approve state choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this proposed action merely approves state law as meeting Federal requirements and does not impose additional requirements beyond those imposed by state law. For that reason, this proposed action:

- Is not a significant regulatory action subject to review by the Office of Management and Budget under Executive Orders 12866 (58 FR 51735, October 4, 1993) and 13563 (76 FR 3821, January 21, 2011);
- Does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- Is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- Does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Public Law 104-4);
- Does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- Is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);

- Is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act; and
- Does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, the SIP is not approved to apply on any Indian reservation land or in any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications and will not impose substantial direct costs on tribal governments or preempt tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Reporting and recordkeeping requirements, Sulfur oxides.

Dated: April 2, 2018.

Alexandra Dunn,
Regional Administrator,
EPA Region 1

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